



PATENT
Attorney Docket No. RIB-000CP

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6-13-02

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Steitz *et al.*
SERIAL NO.: 09/922,251 GROUP NO.: 2878
FILING DATE: August 3, 2001 EXAMINER: Not yet assigned
TITLE: RIBOSOME STRUCTURE AND PROTEIN SYNTHESIS
INHIBITORS

Assistant Commissioner for Patents
Washington, D.C. 20231

INFORMATION DISCLOSURE STATEMENT

Sir:

In accordance with the provisions of 37 C.F.R. 1.97 and 1.98, Applicants hereby make of record the patents and publications listed on the accompanying Form PTO-1449, and other information contained herein, for consideration by the Examiner in connection with the examination of the above-identified patent application. Copies of the patents and publications are enclosed.

REMARKS

In accordance with the provisions of 37 C.F.R. 1.97, this statement is being filed (CHECK ONE):

- ☒ (1) within three (3) months of the **filing date** of a national application other than a continued prosecution application under 37 C.F.R. 1.53(d), or within three (3) months of the **date of entry of the national stage** as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing of the **first Office action** on the merits, or before the mailing of a **first Office action** after the filing of a request for continued examination under 37 C.F.R. 1.114; or
- ☐ (2) after the period defined in (1) but before the mailing date of a **final action** or a **notice of allowance** under 37 C.F.R. 1.311, and
- ☐ the requisite Statement is below, **OR**
- ☐ the requisite fee under 37 C.F.R. 1.17(p), namely **\$180.00**, is included herein, or
- ☐ (3) after the mailing date of a **final action** or **notice of allowance** but before the payment of the **issue fee**, **AND**

- ☐ the requisite Statement is below, **AND**
- ☐ the requisite petition fee under 37 C.F.R. 1.17(p), namely **\$180.00** is included herein.

It is respectfully requested that each of the patents and publications listed on the attached Form PTO-1449, and other information contained herein, be made of record in this application.

STATEMENT

As required under 37 C.F.R. 1.97(e), Applicant(s), through the undersigned, hereby state either that [check the appropriate space only if either (2) or (3) is checked on the previous page and the Statement is required]:

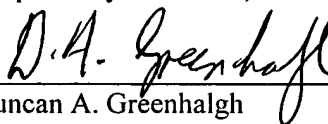
- ☐ 1. Each item of information contained in the Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application **not more than three months** prior to the filing of the Information Disclosure Statement; or
- ☐ 2. No item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing this Statement after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to **any individual** designated in 37 C.F.R. 1.56(c) **more than three months** prior to the filing of the Information Disclosure Statement.

Date: April 9, 2002
Reg. No. 38,678

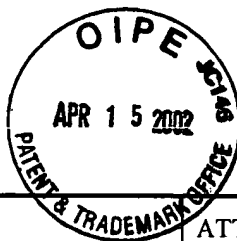
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Respectfully submitted,

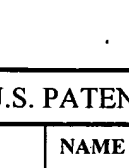


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U.S. PATENT DOCUMENTS									
EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE APPROPRIATE		
FOREIGN PATENT DOCUMENTS									
EXAM. INIT.		DOCUMENT NUMBER	DATE	COUNTRY CODE	CLASS	SUB CLASS	FILING DATE	ABSTRACT ONLY	ENGLISH LANG (Y/N)
	B1	EP 1 172 374 A1	01/16/02	EP			07/13/01		Yes
	B2	WO 99/63937 A3	12/16/99	PCT			06/08/99		Yes
	B3	WO 01/80863 A1	11/01/01	PCT			04/27/01		Yes
OTHER ART, JOURNAL ARTICLES, ETC.									
EXAM. INIT.	OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)								
	C1	Agrawal <i>et al.</i> , (1998) "Visualization of elongation factor G on the <i>Escherichia coli</i> 70S ribosome: The mechanism of translocation," <u>Proc. Natl. Acad. Sci. USA</u> Vol. 95, pp. 6134-6138							
	C2	Ban <i>et al.</i> , (1999) "Placement of protein and RNA structures into a 5 Å-resolution map of the 50S ribosomal subunit," <u>Nature</u> Vol. 400, pp. 841-847							
	C3	Ban <i>et al.</i> , (1998) "A 9 Å Resolution X-Ray Crystallographic Map of the Large Ribosomal Subunit," <u>Cell</u> Vol. 93, pp. 1105-1115							
	C4	Baranov <i>et al.</i> , (1998) "The Database of Ribosomal Cross links (DRC)," <u>Nucleic Acids Research</u> Vol. 26, No. 1, pp. 187-189							
	C5	Brodersen <i>et al.</i> , (2000) "The Structural Basis for the Action of the Antibiotics Tetracycline, Pactamycin, and Hygromycin B on the 30S Ribosomal Subunit," <u>Cell</u> Vol. 103, pp. 1143-1154							
	C6	Brünger, (1997) "Patterson Correlation Searches and Refinement," <u>Methods in Enzymology</u> , Vol. 276, pp. 558-580							
	C7	Carter <i>et al.</i> , (2001) "Crystal Structure of an Initiation Factor Bound to the 30S Ribosomal Subunit," <u>Science</u> Vol. 291, pp. 498-501							
	C8	Carter <i>et al.</i> , (2000) "Functional insights from the structure of the 30S ribosomal subunit and its interactions with antibiotics," <u>Nature</u> Vol. 407, pp. 340-348							
	C9	Cate <i>et al.</i> , (1999) "X-ray Crystal Structures of 70S Ribosome Functional Complexes," <u>Science</u> Vol. 285, pp. 2095-2104							



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OTHER ART, JOURNAL ARTICLES, ETC.			
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	C10	Clemons Jr. <i>et al.</i> , (1999) "Structure of a bacterial 30S ribosomal subunit at 5.5 Å resolution," <u>Nature</u> Vol. 400, pp. 833-840	
	C11	Culver <i>et al.</i> , (1999) "Identification of an RNA-Protein Bridge Spanning the Ribosomal Subunit Interface," <u>Science</u> Vol. 285, pp. 2133-2135	
	C12	Dahlberg <i>et al.</i> , (2001) "The Ribosome in Action," <u>Science</u> Vol. 292, pp. 868-869	
	C13	Douthwaite <i>et al.</i> , (1995) "Recognition determinants for proteins and antibiotics within 23S rRNA," <u>Biochem. Cell Biol.</u> Vol 73: pp. 1179-1185	
	C14	Douthwaite <i>et al.</i> , (1993) "Erythromycin Binding is Reduced in Ribosomes with Conformational Alterations in the 23 S rRNA Peptidyl Transferase Loop," <u>Journal Mol. Biol.</u> Vol 232, pp. 725-731	
	C15	Douthwaite, (1992) "Functional Interactions within 23S rRNA Involving the Peptidyltransferase Center," <u>Journal of Bacteriology</u> Vol. 174, No. 4, pp. 1333-1338	
	C16	Gabashvili <i>et al.</i> , (2000) "Solution Structure of the <i>E. coli</i> 70S Ribosome at 11.5 Å Resolution," <u>Cell</u> , Vol. 100, pp. 537-549	
	C17	Di Giambattista <i>et al.</i> , (1990) "Affinity Labeling of the Virginiamycin S Binding Site on Bacterial Ribosome," <u>Biochemistry</u> Vol. 29, pp. 9203-9211	
	C18	Gonzales, <i>et al.</i> , (2001) "Infections due to vancomycin-resistant <i>Enterococcus faecium</i> resistant to Linezolid," <u>The Lancet</u> Vol. 357, p. 1179	
	C19	Gregory <i>et al.</i> , (1999) "Erythromycin Resistance Mutations in Ribosomal Proteins L22 and L4 Perturb the Higher Order Structure of 23 S Ribosomal RNA," <u>J. Mol. Biol.</u> Vol. 289, pp. 827-834	
	C20	Hansen <i>et al.</i> , (1990) "Crystals of complexes mimicking protein biosynthesis are suitable for crystallographic studies," <u>Biochimica et Biophysica Acta</u> Vol. 1050, pp. 1-7	
	C21	Harms <i>et al.</i> , (2001) "High Resolution Structure of the Large Ribosomal subunit from a Mesophilic Eubacterium," <u>Cell</u> Vol. 107, pp. 679-688	
	C22	Harms <i>et al.</i> , (1999) "Elucidating the medium-resolution structure of ribosomal particles: an interplay between electron cryo-microscopy and X-ray crystallography," <u>Structure</u> Vol. 7, No. 8, pp. 931-941	
	C23	Kloss <i>et al.</i> , (1999) "Resistance Mutations in 23 S rRNA Identify the Site of Action of the Protein Synthesis Inhibitor Linezolid in the Ribosomal Peptidyl Transferase Center," <u>J. Mol. Biol.</u> Vol 294(1)pp. 93-101	
	C24	Lázaro <i>et al.</i> , (1996) "A Sparsomycin-resistant Mutant of <i>Halobacterium salinarium</i> Lacks a Modification at Nucleotide U2603 in the Peptidyl Transferase Centre of 23 S rRNA," <u>J. Mol. Biol.</u> Vol. 261(2) pp. 231-238	



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EXAM. INIT.	OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)		
	C25	Lazaro <i>et al.</i> , (1991) "Chemical, biochemical and genetic endeavours characterizing the interaction of sparsomycin with the ribosome," <u>Biochimie</u> Vol. 73, pp. 1137-1143	
	C26	Moazed <i>et al.</i> , (1989) "Interaction of tRNA with 23S rRNA in the Ribosomal A, P, and E Sites," <u>Cell</u> Vol. 57, pp. 585-597	
	C27	Moazed <i>et al.</i> , (1987) "Chloramphenicol, erythromycin, carbomycin and vernamycin B protect overlapping sites in the peptidyl transferase region of 23S ribosomal RNA," <u>Biochimie</u> Vol. 69, pp. 879-884	
	C28	Mueller <i>et al.</i> , (2000) "The 3D Arrangement of the 23 S and 5 S rRNA in the <i>Escherichia coli</i> 50 S Ribosomal Subunit Based on a Cryo-electron Microscopic Reconstruction at 7.5 Å Resolution," <u>J. Mol. Biol.</u> Vol. 298, pp. 35-59	
	C29	Navaza <i>et al.</i> , (1997) "AMoRe: An Automated Molecular Replacement Program Package," <u>Methods in Enzymology</u> Vol. 276, pp. 581-595	
	C30	Nissen <i>et al.</i> , (2000) "The Structural Basis of Ribosome Activity in Peptide Bond Synthesis," <u>Science</u> Vol. 289, pp. 920-930	
	C31	Noller, (1991) "Ribosomal RNA and Translation," <u>Annu. Rev. Biochem.</u> Vol 60. Pp. 191-227	
	C32	Ogle <i>et al.</i> , (2001) "Recognition of Cognate Transfer RNA by the 30S Ribosomal Subunit," <u>Science</u> Vol. 292, pp. 897-902	
	C33	Pestka, (1974) "Antibiotics as Probes of Ribosome Structure: Binding of Chloramphenicol and Erythromycin to Polyribosomes; Effect of Other Antibiotics," <u>Antimicrobial Agents and Chemotherapy</u> Vol. 5, No. 3, pp. 255-267	
	C34	Porse <i>et al.</i> , (1999) "Ribosomal Mechanics, Antibiotics, and GTP Hydrolysis," <u>Cell</u> Vol. 97, pp. 423-426	
	C35	Porse <i>et al.</i> , (1999) "Sites of Interaction of Streptogramin A and B Antibiotics in the Peptidyl Transferase Loop of 23 S rRNA and the Synergism of their Inhibitory Mechanisms," <u>J. Mol. Biol.</u> Vol. 286(2), pp. 375-387	
	C36	Ramakrishnan <i>et al.</i> , (1995) "Structures of prokaryotic ribosomal proteins: implications for RNA binding and evolution," <u>Biochem. Cell Biol.</u> Vol. 73, pp. 979-986	
	C37	Rodriguez-Fonseca <i>et al.</i> , (1995) "Fine Structure of the Peptidyl Transferase Centre on 23 S-like rRNAs Deduced from Chemical Probing of Antibiotic-Ribosome Complexes," <u>J. Mol. Biol.</u> Vol. 247, pp. 224-235	
	C38	Schlunzen <i>et al.</i> , (2000) "Structure of Functionally Activated Small Ribosomal Subunit at 3.3 Å Resolution," <u>Cell</u> Vol. 102, pp. 615-623	
	C39	Schlünzen <i>et al.</i> , (2001) "Structural basis for the interaction of antibiotics with the peptidyl transferase centre in eubacteria," <u>Nature</u> Vol. 413, pp. 814-821	



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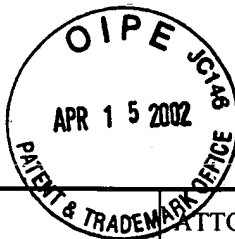
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OTHER ART, JOURNAL ARTICLES, ETC.

EXAM. INIT.	OTHER DOCUMENTS: (Including Author, Title, Date, Relevant Pages, Place of Publication)	
	C40	Shinabarger <i>et al.</i> , (1997) "Mechanism of Action of Oxazolidinones: Effects of Linezolid and Eperezolid on Translation Reactions," <u>Antimicrobial Agents and Chemotherapy</u> Vol. 41, No. 10, pp. 2132-2136
	C41	Swaney <i>et al.</i> , (1998) "The Oxazolidinone Linezolid Inhibits Initiation of Protein Synthesis in Bacteria," <u>Antimicrobial Agents and Chemotherapy</u> Vol. 42, No. 12, pp. 3251-3255
	C42	Tocilj <i>et al.</i> , (1999) "The small ribosomal subunit from <i>Thermus thermophilus</i> at 4.5 Å resolution: Pattern fittings and the identification of a functional site," <u>Proc. Natl. Acad. Sci.</u> Vol. 96, No. 25, pp. 14252-14257
	C43	Trakhanov <i>et al.</i> , (1987) "Crystallization of 70 S ribosomes and 30 S ribosomal subunits from <i>Thermus thermophilus</i> ," <u>FEBS Letters</u> Vol. 220, No. 2, pp. 319-322
	C44	Tsiodras <i>et al.</i> , (2001) "Linezolid resistance in a clinical isolate of <i>Staphylococcus aureus</i> ," <u>The Lancet</u> Vol. 358, pp. 207-208
	C45	Vannuffel <i>et al.</i> , (1992) "Identification of a Single Base Change in Ribosomal RNA Leading to Erythromycin Resistance," <u>Journal of Biological Chemistry</u> Vol. 267, No. 12, pp. 8377-8382
	C46	Vannuffel <i>et al.</i> , (1996) "Mechanism of Action of Streptogramins and Macrolides," <u>Drugs</u> Vol. 51, Suppl 1, pp. 20-30
	C47	Vester <i>et al.</i> , (1988) "The importance of highly conserved nucleotides in the binding region of chloramphenicol at the peptidyl transfer centre of <i>Escherichia coli</i> 23S ribosomal RNA," <u>The EMBO Journal</u> Vol. 7, No. 11, pp. 3577-3587
	C48	Vester <i>et al.</i> , (2001) "Macrolide Resistance Conferred by Base Substitutions," <u>Antimicrobial Agents and Chemotherapy</u> Vol. 45, No. 1, pp. 1-12
	C49	Volkman <i>et al.</i> , (1990) "Characterization and Preliminary Crystallographic Studies on Large Ribosomal Subunits from <i>Thermus thermophilus</i> ," <u>J. Mol. Biol.</u> Vol. 216, pp. 239-241
	C50	Wimberly <i>et al.</i> , (2000) "Structure of the 30S ribosomal subunit," <u>Nature</u> Vol. 407, pp. 327-339
	C51	Wittmann <i>et al.</i> , (1982) "Crystallization of <i>Escherichia coli</i> ribosomes," <u>FEBS Letters</u> Vol. 146, No. 1, pp. 217-220
	C52	Xiong <i>et al.</i> , (2000) "Oxazolidinone Resistance Mutations in 23S rRNA of <i>Escherichia coli</i> Reveal the Central Region of Domain V as the Primary Site of Drug Action," <u>Journal of Bacteriology</u> Vol. 182, No. 19, pp. 5325-5331
	C53	Yonath <i>et al.</i> , (1998) "Crystallographic Studies on the Ribosome, a Large Macromolecular Assembly Exhibiting Severe Nonisomorphism, Extreme Beam Sensitivity and No Internal Symmetry," <u>Acta Cryst.</u> Vol. A54, pp. 945-955
	C54	Yusupova <i>et al.</i> , (2001) "The Path of Messenger RNA through the Ribosome," <u>Cell</u> Vol. 106, pp. 233-241



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	C55	Yusupov <i>et al.</i> , (2001) "Crystal Structure of the Ribosome 5.5 Å Resolution," <u>Science</u> Vol. 292, pp. 883-896
	C56	Yusupov <i>et al.</i> , (1991) " <i>Thermus thermophilus</i> ribosomes for crystallographic studies," <u>Biochimie</u> Vol. 73, pp. 887-897
	C57	Zemlicka <i>et al.</i> , (1993) "Hybrids of Antibiotics Inhibiting Protein Synthesis. Synthesis and Biological Activity," <u>J. Med. Chem.</u> Vol. 36, pp. 1239-1244
	C58	Timmermans <i>et al.</i> , (1982) "Sparsophenicol: A New Synthetic Hybrid Antibiotic Inhibiting Ribosomal Peptide Synthesis," <u>J. Med. Chem.</u> Vol. 25, pp. 1123-1125
	C59	Ban <i>et al.</i> , (2000) "The Complete Atomic Structure of the Large Ribosomal Subunit at 2.4 Å Resolution," <u>Science</u> Vol. 289, pp. 904-920
EXAMINER		DATE CONSIDERED

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